

PATENT ABSTRACTS OF JAPAN

(11)Publication number : **2001-081628**

(43)Date of publication of application : **27.03.2001**

(51)Int.Cl.

D01F 6/46

A47G 27/02

(21)Application number : **11-259648**

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(22)Date of filing : **14.09.1999**

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(54) **FLAT YARN FOR BASE CLOTH OF NEEDLE-PUNCHED CARPET**

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a flat yarn composed of a polypropylene composition having sufficiently high transparency to avoid the necessity to change the yarn according to the variation of the cotton color in the case of using as a base cloth of needle-punched carpet.

SOLUTION: The objective flat yarn for a base cloth of a needle-punched carpet is formed from a resin composition produced by compounding 100 pts.wt. of a polypropylene with 3-10 pts.wt. of a low-density polyethylene and 0.05-2.0 pts.wt. of a nucleation agent.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the good flat yarn of transparency used as a primary base fabric of a needle punch carpet.

[0002]

[Description of the Prior Art] Conventionally, in floors, such as the trade fair exhibition hall, the cheap needle punch carpet is used abundantly. In order to raise productivity, a needle punch carpet limits and prepares for about nine colors the color of the primary base fabric formed beforehand in the present condition, changes the first [in all] base fabric into the color of cotton, joins a primary base fabric to cotton by the needle punch method, and is manufacturing the carpet.

[0003] However, the method of changing the first [in all] base fabric into the color of cotton in this way is complicated, and since productivity is inferior, the attempt which uses the primary base fabric of the natural color of a resin in common to the cotton of all colors is also made. Although based also on the density of the cotton to join at this time, there is usually little density and a primary base fabric can be seen in many cases from between cotton. And the calcium carbonate is blended with the line of thread used for this primary base fabric for the thread crack prevention at the time of weaving, for the reason, the near color is presented whiter than the transparent natural color of a resin, and the fault that a primary base fabric will be conspicuous and it will be visible has arisen from between cotton. Moreover, the fluff which occurs at the time of needle punch and starts between cotton, and its problem that it will be conspicuous because of a near color white existed.

[0004]

[Problem(s) to be Solved by the Invention] this invention aims at offering the polypropylene flat yarn which has the high transparency for primary base fabrics which does not need to be changed according to the color of cotton by the object for needle punch carpets in view of such the present condition.

[0005]

[Means for Solving the Problem] this invention was made in order to attain the above-mentioned purpose, it offers the flat yarn for needle punch carpet base fabrics which comes to blend a low density polyethylene 3 - 10 weight sections, and a nucleating additive 0.05 - the 2.0 weight sections to the polypropylene 100 weight section, and cancels the above-mentioned technical problem.

[0006]

[Embodiments of the Invention] Hereafter, this invention is explained in detail. Well-known polypropylene copolymers or those mixture, such as a propylene homopolymer, an ethylene-propylene block copolymer, or a random copolymer, can be used for the polypropylene used for this invention. In these, the propylene homopolymer from which a film with little thermal-contraction nature is obtained is desirable, and it is desirable to choose a with a rates [of an isotactic pentad] of 0.95 or more thing especially. The melt flow rate (it abbreviates to MFR hereafter) of the above-mentioned polypropylene has desirable 0.1-20g / 10min., and its 1-10g / 10min. are more desirable.

[0007] the ethylene and alpha olefin copolymer and ethylene vinylacetate copolymer which were manufactured using the low density polyethylene by which the low density polyethylene used for this

invention was manufactured by the high pressure process, the straight chain-like low density polyethylene, and the metallocene catalyst, an ethylene-acrylic-acid alkyl ester copolymer, etc. are mentioned, and these are independent -- or two or more sorts are combined and it is used Among these, the low density polyethylene manufactured by the high pressure process is desirable. MFR of the above-mentioned low density polyethylene has desirable 0.1-20g / 10min., and its 1-10g / 10min. are more desirable.

[0008] the nucleating additive used for this invention speeds up [crystallization], and has the **** effect, and if it is *****, an organic system nucleating additive, an inorganic system nucleating additive, etc. can use all for improvement in transparency As an organic system nucleating additive, there are a JIBEN zylidene sorbitol system compound, a phosphoric-acid system compound, etc., as a JIBEN zylidene sorbitol system compound, a JIBEN zylidene sorbitol, a PARAMECHIRUJI benzylidene sorbitol, a PARAECHIRUJI benzylidene sorbitol, etc. are mentioned, and, specifically, phosphoric-acid screw (4-t-buthylphenyl) sodium, a phosphoric acid -2, 2'-methylene screw (4, 6-G t-buthylphenyl) sodium, etc. are mentioned as a phosphoric-acid system compound. Specifically as an inorganic system nucleating additive, talc, titanium, a silica, a kaolin, an alum, etc. are mentioned. Among these, an organic phosphoric-acid metal salt is desirable.

[0009] In this invention, the polypropylene constituent which are a low density polyethylene 3 - 10 weight sections, and a nucleating additive 0.05 - the 2.0 weight sections is used to the polypropylene 100 weight section. If a next weave process becomes difficult by the loadings of a low density polyethylene arising in lengthwise under in 3 weight sections to the polypropylene 100 weight section and a thread crack exceeds 10 weight sections, the rate of a thermal contraction becomes large and is not desirable as an object for needle punch carpet primary base fabrics.

[0010] Moreover, even if the loadings of a nucleating additive become insufficient [less than 0.05 / transparency] and exceed the 2.0 weight sections to the polypropylene 100 weight section, it is difficult to raise transparency more than it, and it is not economical. Incidentally, in a tubular film process, for example, in not adding a nucleating additive, the Hayes value of a film with a thickness of 50 micrometers becomes 35% or more, and a film with 10% or less of transparency good [the Hayes value of a film with a thickness of 50 micrometers which added the nucleating additive in the above-mentioned range] is obtained.

[0011] The method of forming the flat yarn of this invention carries out melting kneading of the above-mentioned polypropylene constituent with an extruder, and a film is fabricated in a T die method or a tubular film process, and after carrying out the slit of the fabricated film, it is extended, subsequently it is heat-treated, and forms a flat yarn. In this invention, the split yarn obtained by performing **** processing to the aforementioned flat yarn by request is also included. Although extension processing is performed at the temperature more than softening temperature below the melting point of a polypropylene constituent, as a heating method, any methods, such as a hot-calender-roll formula, a hot-platen formula, an infrared formula, and a hot blast formula, are employable. The film by which the slit was carried out is heated and extends according to the peripheral-velocity difference of an order roll. Draw magnification is five to 8 times more preferably three to 10 times.

[0012] Thus, the obtained flat yarn is used for circumstances thread, and is woven, and a base fabric is constituted. circular as the **** method -- a weaving machine and the Sulzer type -- a weaving machine and a water jet type -- a weaving machine and an air-jet type -- ***** woven using a weaving machine etc. is made As the textile construction, various configurations, such as plain weave, twill, and a leno weave, are applied. 10-24 [/] and the woof inch have [placing density] desirable warp in 5-20 [/inch]. As composition of a base fabric, 50-500g/m² has the desirable eyes of textile fabrics, and 100 - 300 g/m² is more desirable.

[0013] In the range which does not deviate from the meaning of this invention by the purpose of use, you may blend additives, such as an antioxidant, lubricant, an ultraviolet ray absorbent, a light stabilizer, a flame retarder, an antistatic agent, a pigment, an inorganic bulking agent, an organic bulking agent, a cross linking agent, and a foaming agent, with the polypropylene constituent used for this invention.

[0014]

[Example] It is a high pressure process to polypropylene (MFR=2.0g/10min.). Using 5 % of the weight

(MFR=2.0g/10min., density =0.922 g/cm³) of manufactured low density polyethylenes, and the mixture which blended 0.1 % of the weight of organic phosphoric-acid metal salts as nucleating additives, the film was formed by the tubular film process, it cooled, and the flat yarn with a thickness of 50 micrometers was obtained extension 6.8 times by the hot-platen contact process extending method at fineness 106Tex at the extension-after slit temperature of 130 degrees C, and the annealing temperature of 135 degrees C. The transparency of the Hayes value of this flat yarn was good at 9.6%. the above-mentioned flat yarn -- circumstances thread -- using it -- well-known Sulzer -- the base fabric of plain weave was obtained for placing density by the inch in 14x9 [/] with the weaving machine ***** of the above-mentioned base fabric were 830Ns long / 5cm, and 430/5cm wide. Moreover, the rate of a thermal contraction of this base fabric was built, and was good at 2.5% (130 degree-Cx 10-minute heat treatment) wide. Since the transparency of a base fabric is excellent and the color of a base fabric was not conspicuous from the crevice between cotton when this base fabric was used for needle punch carpet primary base fabrics, it could be used as a common primary base fabric also to the cotton of what color, and has been suitably used as a primary base fabric which whose fluff of the thread of the base fabric at the time of punching was not conspicuous, either, and was excellent in appearance.

[0015]

[Effect of the Invention] As explained above, it is the flat yarn for needle punch carpet base fabrics of this invention. While blending a low density polyethylene suitably and preventing a thread crack instead of adding the calcium carbonate with which the conventional white is conspicuous in order to prevent the thread crack at the time of weaving The textile fabrics which the nucleating additive was added by request, and the transparency of a flat yarn was raised, and used this flat yarn for circumstances thread by the method of fabricating a flat yarn as a base fabric for needle punch carpets Since it can be used as a common primary base fabric [be / nothing] with respect to the color of cotton, an excelling-in the improvement in productivity practical effect is done so.

[Translation done.]